

**REMARKS**

Claims 1-41 are pending in this application, claims 24-40 having been withdrawn from consideration. By this Amendment, claims 1, 22 and 24 are amended, and new claim 41 is added. Support for the amendments to claims 1, 22 and 24 can be found in the specification as originally filed, for example, at paragraph [0024] and in claims 1, 22 and 24 as originally filed. Support for new claim 41 can be found in the specification as originally filed, for example, at paragraphs [0021] and [0023], and in claim 1 as originally filed. Thus, no new matter is added by these amendments.

**I. Interview**

Applicant appreciates the courtesies shown to Applicant's representative by Examiner Ildebrando in the May 19 personal interview. Applicant's separate record of the substance of the interview is incorporated into the following remarks. New claim 41 is directed to a carbon monoxide selective oxidizing catalyst comprising a ZSM-5 carrier, and substantially corresponds to claim 1. The claim is presented in response to the Examiner's helpful suggestion to separate the ferrierite and ZSM-5 carriers into separate claims.

**II. Information Disclosure Statement**

An Information Disclosure Statement with Form PTO-1449 was filed in the above-captioned patent application on April 15, 2004. Applicant has not yet received from the Examiner a copy of the Form PTO-1449 initialed to acknowledge the fact that the Examiner has considered the disclosed information. The Examiner is requested to initial and return to the undersigned a copy of the Form PTO-1449. For the convenience of the Examiner, a copy of that form is attached.

### III. Rejections Under 35 U.S.C. §102

#### A. Szabo

The Office Action rejects claims 1, 6-8, 11, 12, 17-19, 22 and 23 under 35 U.S.C. §102(b) over U.S. Patent 6,136,289 to Szabo et al. Applicant respectfully traverses this rejection.

Independent claim 1 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst, comprising: a carrier consisting essentially of ferrierite; and a metal component supported on the carrier and which includes one of platinum (Pt) alone and platinum (Pt) and at least one type of transition metal, ... wherein the maximum pore diameter of the carrier ranges from 0.55 to 0.65 nanometers (nm)." Independent claim 11 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst, comprising: a carrier whose maximum pore diameter ranges from 0.55 to 0.65 nanometers (nm); and a metal component supported on the carrier and which includes one of platinum (Pt) alone and platinum (Pt) and at least one type of transition metal ... ." Independent claim 22 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst ... , wherein the catalyst is provided with a metal component including one of platinum (Pt) alone and platinum and at least one type of transition metal, ... wherein the carbon monoxide selective oxidizing catalyst is supported on a carrier having a maximum pore diameter ranging from 0.55 to 0.65 nanometers (nm)." Claims 6-8, 12, 17-19 and 23 depend from either claim 1, claim 11 or claim 22 and contain all of the limitations thereof. New claim 41 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst, comprising: a carrier consisting essentially of one of ferrierite and ZSM-5; and a metal component supported on the carrier and which includes one of platinum (Pt) alone and platinum (Pt) and at least one type of transition metal, ... wherein the maximum pore diameter of the carrier is 0.54 nanometers (nm)."

In order to anticipate a claimed invention, the reference must disclose, in specific embodiments, all of the limitations of the claimed invention. That is, a prior art reference anticipates the claimed invention only where all claimed elements or steps of the claimed invention are disclosed, either expressly or inherently, in the reference. Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991); In re Marshall, 577 F.2d 301, 198 USPQ 344 (CCPA 1978). Szabo does not disclose, in specific embodiments, each and every limitation of the independent claims 1, 11, 22 or 41, or their dependent claims, and thus cannot anticipate claims 1, 11, 22 or 41, or their dependent claims.

Szabo is cited as disclosing a catalyst composition including platinum loaded onto a ferrierite carrier and used for the conversion of hydrocarbons. The Szabo carrier allegedly has a pore size within the range presently claimed in claims 1, 11 and 22 or meeting the maximum pore diameter set forth in claim 41.

However, Szabo does not disclose, in discrete embodiments, a ferrierite carrier having maximum pore diameter ranges from 0.55 to 0.65 nanometers or a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers. As disclosed in the instant specification, at paragraph [0022], the maximum pore diameter is directly related to the performance of the catalyst for selective oxidation of carbon monoxide. Figure 4, which shows the relationship between the pore diameter of catalyst carriers and the maximum carbon monoxide reduction rate, shows a peak in carbon monoxide conversion within the claimed range of maximum pore diameters. This demonstrates the superior ability of catalysts having ferrierite carriers having a maximum pore diameter of from 0.55 to 0.65 nanometers and ZSM-5 carriers having a maximum pore diameter of 0.54 nanometers to selectively oxidize carbon monoxide. See Specification, paragraph [0057]. As shown in Figure 3, catalysts (2), which corresponds to a platinum catalyst on a ferrierite carrier having a maximum pore diameter of from 0.55 to

0.65 nanometers, and (3), which corresponds to a platinum catalyst on a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers, can achieve lower minimum carbon monoxide concentration values. See Specification, paragraph [0056]. Szabo, in contrast to claims 1, 11, 22 and 41, does not disclose the size of the carrier's maximum pore diameter or the effects of pore diameter on selectivity and does not recognize the importance of the maximum pore diameter of the carrier. Thus, Szabo does not disclose a carrier having a maximum pore diameter range of from 0.55 to 0.65 nanometers, as required by claims 1, 11 and 22, nor does Szabo disclose a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers, as required by claim 41.

For at least these reasons, claims 1, 6-8, 11, 12, 17-19, 22, 23 and 41 are patentable over Szabo. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

**B. Andorf**

The Office Action rejects claims 1, 6-9, 11, 12, 17-20, 22 and 23 under 35 U.S.C. §102(b) over U.S. Patent 5,955,395 to Andorf et al. Applicant respectfully traverses this rejection.

Claims 1, 11, 22 and 41 are as set forth above. Claims 6-9, 12, 17-20 and 23 depend from either claim 1, claim 11 or claim 22 and contain all of the limitations thereof.

Andorf is cited as disclosing a catalyst composition including platinum loaded onto a zeolite carrier such as ZSM-5 and used for the selective conversion of carbon monoxide from a hydrogen-rich gas stream. The Andorf carrier allegedly has a pore size in the range claimed in claims 1, 11 and 22 or meeting the maximum pore diameter set forth in claim 41.

However, Andorf does not disclose, in discrete embodiments, a carrier having maximum pore diameter ranges from 0.55 to 0.65 nanometers or a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers. Andorf, like Szabo, does not recognize the

importance of the maximum pore diameter of the carrier and does not disclose the size of the carrier's maximum pore diameter or the effects of pore diameter on selectivity. Thus, Andorf does not disclose a carrier having a maximum pore diameter range of from 0.55 to 0.65 nanometers, as required by claims 1, 11 and 22, nor does Andorf disclose a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers, as required by claim 41. In addition, Andorf does not disclose a ferrierite carrier for the catalyst, as set forth in claim 1.

For at least these reasons, claims 1, 6-9, 11, 12, 17-20, 22, 23 and 41 are patentable over Andorf. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

#### **IV. Rejections Under 35 U.S.C. §103**

The Office Action rejects claims 1, 6-12 and 17-23 under 35 U.S.C. §103(a) over EP 0 833 401 A2 to Aoyama in view of Andorf. Applicant respectfully traverses this rejection.

Claims 1, 11, 22 and 41 are set forth above. Claims 6-10, 12 and 17-21 and 23 depend from either claim 1, claim 11 or claim 22 and contain all of the limitations thereof.

Aoyama is cited as allegedly disclosing a reforming reactor for reducing carbon monoxide including a catalyst composition that includes platinum on a zeolite carrier and is used for the selective conversion of carbon monoxide from a hydrogen-rich gas stream. The Office Action admits that Aoyama does not disclose or suggest the specific zeolite carriers, and relies on Andorf for its teaching of a ZSM-5 zeolite carrier.

However, neither Aoyama nor Andorf discloses or suggests a carrier having a maximum pore diameter range of from 0.55 to 0.65 nanometers or a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers. As discussed above, Andorf does not recognize the importance of the maximum pore diameter of the carrier and does not disclose or suggest either the size of its carrier's maximum pore diameter or the effects of pore

diameter on selectivity. Similarly, Aoyama does not disclose or suggest either the size of its carrier's maximum pore diameter or the effects of pore diameter on selectivity. Thus, Aoyama, alone or in combination with Andorf, does not disclose or suggest a carrier having a maximum pore diameter range of from 0.55 to 0.65 nanometers, as required by claims 1, 11 and 22 or a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers, as required by claim 41. In addition, Aoyama does not disclose a ferrierite carrier for the catalyst, as set forth in claim 1.

For at least these reasons, claims 1, 6-12 and 17-23 and 41 are patentable over Aoyama in view of Andorf. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

**V. Rejections Under 35 U.S.C. §§102/103**

The Office Action rejects claims 1-8, 11-19, 22 and 23 under 35 U.S.C. §102(b), or in the alternative, under 35 U.S.C. §103(a) over JP A 6-198192. Applicant respectfully traverses this rejection.

Claims 1, 11, 22 and 41 are as set forth above. Claims 2-8, 12-19 and 23 depend from either claim 1, claim 11 or claim 22 and contain all of the limitations thereof.

JP A 6-198192 is cited as allegedly disclosing a catalyst composition including platinum and iron loaded onto a zeolite carrier such as ZSM-5 and used for the selective conversion of carbon monoxide from a hydrogen-rich gas stream. The JP A 6-198192 carrier allegedly has a pore size in the range claimed in claims 1, 11 and 22.

However, JP A 6-198192 does not disclose or suggest a carrier having maximum pore diameter ranges from 0.55 to 0.65 nanometers or a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers. JP A 6-198192 does not disclose or suggest either the size of the carrier's maximum pore diameter or the effects of pore diameter on selectivity and does not recognize the importance of the maximum pore diameter of the carrier, which is discussed

above with respect to Szabo. Thus, JP A 6-198192 does not disclose or suggest a carrier having a maximum pore diameter range of from 0.55 to 0.65 nanometers, as required by claims 1, 11 and 22 or or a ZSM-5 carrier having a maximum pore diameter of 0.54 nanometers, as required by claim 41. In addition, JP A 6-198192 does not disclose a ferrierite carrier for the catalyst, as set forth in claim 1.

For at least these reasons, claims 1-8, 11-19, 22, 23 and 41 are patentable over JP A 6-198192. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

## **VI. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-41 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:JMS/jms

Attachment:

Form PTO-1449 filed April 15, 2004

Date: May 25, 2004

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